J. Raptor Res. 25(4):120–122

DISTRIBUTION OF BOREAL OWL OBSERVATION RECORDS IN WYOMING

CHRISTOPHER S. GARBER
Wyoming Natural Diversity Database, The Nature Conservancy, 3165 University Station, Laramie, WY 82071

RICHARD L. WALLEN AND KATHERINE E. DUFFY
Grand Teton National Park, P.O. Box 170, Moose, WY 83012

ABSTRACT.—From 1927–89, 50 observations of Boreal Owls (*Aegolius funereus*) have been documented in Wyoming from records which include museum specimens, photographs, limited surveys and incidental observations. Observations were primarily in high elevation coniferous forests in the northwestern and southeastern portions of Wyoming.

Distribución del buho de la especie *Aegolius funereus* en Wyoming.

Extracto.—Desde 1927 hasta 1989, se han documentado cincuenta observaciones hechas a buhos de la especie *Aegolius funereus* en Wyoming. Esta documentación se hizo de registros que incluyen muestras de museo, fotografías, inspecciones limitadas y observaciones incidentales. Las observaciones fueron primariamente hechas en elevadas forestas de coníferas en las zonas noroeste y sudeste de Wyoming.
[Traducción de Eudoxio Paredes-Ruiz]

The Boreal Owl (*Aegolius funereus*) was recently confirmed as nesting in the Rocky Mountain region of the western United States (Palmer and Ryder 1984, Ryder et al. 1987). It has been documented as breeding in states surrounding Wyoming including Montana (Holt and Ermatinger 1989), Idaho (Hayward and Garton 1983) and Colorado (Palmer and Ryder 1984). Previously mentioned records from Wyoming have included 3 observations reported by Palmer and Ryder (1984) and 27 additional observations reported by Hayward and Hayward (in Clark et al. 1989). These authors primarily reported records of incidental observations. In this paper, we present a comprehensive review of Boreal Owl records in Wyoming which include the above records, records from preliminary surveys (call-playback), museum specimens and additional incidental observations.

METHODS

Observation records for Boreal Owls in Wyoming were compiled and entered into The Nature Conservancy's Biological and Conservation Database for analysis. Information was obtained from preliminary field surveys conducted by R. Wallen and K. Duffy in Grand Teton National Park and surveys conducted by staff from the U.S. Forest Service Rocky Mountain Forest and Range Experiment Station in the Medicine Bow National Forest, Carbon County, Wyoming. Additional observations were obtained from Yellowstone National Park, the Wyoming Department of Game and Fish, literature reviews and a review of requests to 91 museums in the United States and Canada for museum specimen records.

RESULTS

We compiled a total of 50 observations for Wyoming from the above sources from 1927–89. These 50 records represent 73 individual owls at 50 sites (Fig. 1). Observations of Boreal Owls in Wyoming have primarily been in Grand Teton National Park (24 records) and in southeastern Carbon County in the Snowy Range and Sierra Madre Range within Medicine Bow National Forest (12 records). Observations were concentrated in these areas since these are the only areas in Wyoming where preliminary surveys have been conducted.

Thirty-one (62%) of all of the Wyoming records were recorded between 1 March through 1 September during the probable breeding season for Boreal Owls in Wyoming. Repeated observations have been made of Boreal Owls in areas surveyed during the breeding season. There is one probable breeding record in the Coon Creek drainage of the Encampment River in the Sierra Madre Mountains of south-central Wyoming. Repeated observations were made here of two adults occupying a hole in a snag but

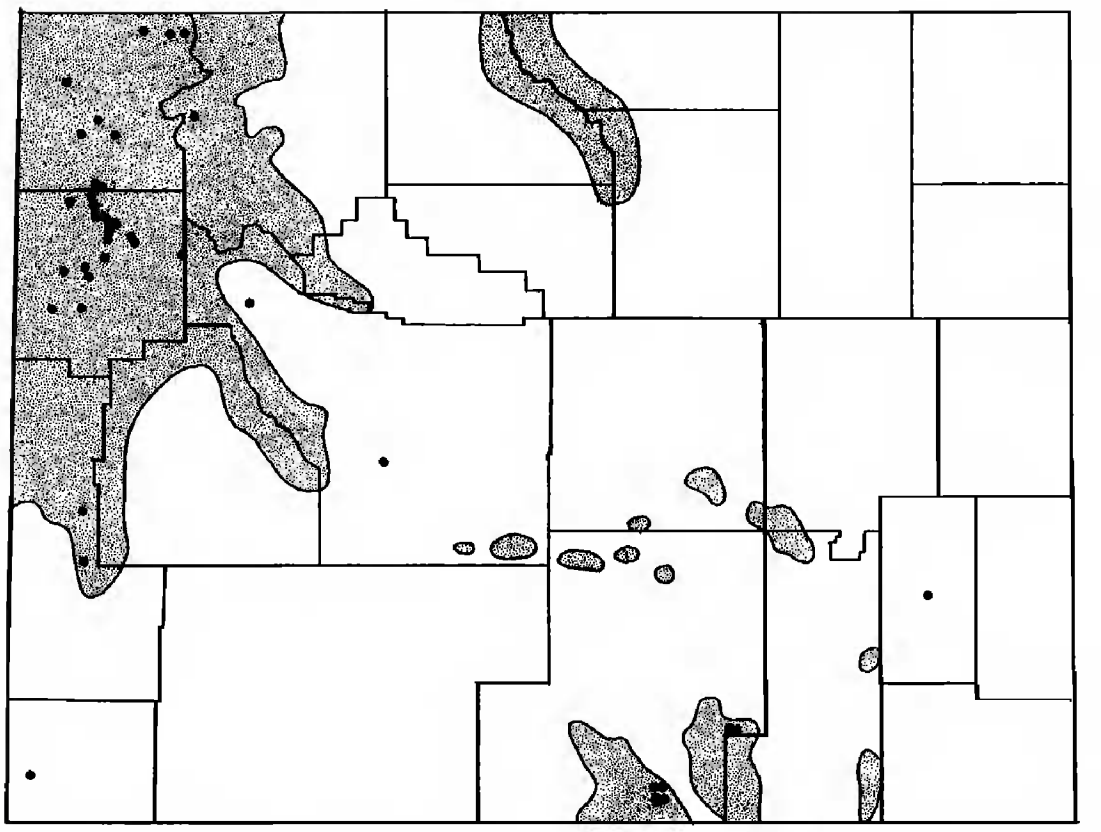

Figure 1. Distribution of Boreal Owl records in Wyoming. Stippled areas represent the distribution of Subalpine Fir, Engelmann Spruce and Lodgepole Pine forest types after Little (1971). All dots outside of stippled area represent winter records. Some dots represent more than one record.

no young were confirmed (H. Henry, pers. comm.). Another probable breeding record is known from the vicinity of Medicine Bow Peak, Snowy Range Mountains in south-central Wyoming where an adult was observed to bring a vole (*Microtus* sp.) to a recently fledged juvenile (S. Fitton, pers. comm.). Both of these areas are contained within the Medicine Bow National Forest.

In addition, courtship was observed at a potential nest cavity located in Grand Teton National Park in 1989, but the adults did not produce any young. Also, juvenile Boreal Owls were photographed in the interior of Grand Teton National Park in 1985. Consequently, circumstantial evidence indicates that this species breeds in following areas: Snowy Range/ Sierra Madre mountains, Grand Teton National Park, and possibly in Yellowstone National Park.

The 50 records range in elevation from 1770 m to 3240 m with a mean of 2490 m. The 31 Boreal Owl observations recorded during the breeding season ranged in elevation from 2000 m to 3240 m with a mean elevation of 2650 m. Habitat recorded for breeding season records in Wyoming are comprised of high-elevation coniferous forests; dominant tree species include Engelmann Spruce (*Picea engelmannii*), Subalpine Fir (*Abies lasiocarpa*) and Lodgepole Pine (*Pinus contorta*).

In the Rocky Mountain region, Boreal Owl observations have primarily been in high-elevation mixed coniferous forest. In Colorado, of four published accounts of Boreal Owl nest sites, two were in Engelmann Spruce snags, and two were in Lodgepole Pine. Roost sites used by Boreal Owls in Colorado were in Engelmann Spruce, Subalpine Fir and Lodgepole Pine (Ryder et al. 1987). In Idaho, Hayward (1989) found Boreal Owls primarily in the spruce-fir forest zone for nesting, foraging and roost habitats. Some use has also been observed in stands of mature Aspens (*Populus tremuloides*) interspersed with the above coniferous forest types.

DISCUSSION

From a review of the above literature on Rocky Mountain Boreal Owl observations and the Wyoming records presented here, it appears that habitats used by Boreal Owls in the Rocky Mountain region and Wyoming, are primarily subalpine forests of Engelmann Spruce, Subalpine Fir, and mature Lodgepole Pine with some use of mature Aspen stands which are interspersed with the above coniferous forest types.

Considering this information, the conifer distribution map for these three tree species, as represented in Figure 1, probably roughly represents po-

tential Boreal Owl habitat within Wyoming. However, it must be emphasized that systematic surveys have yet to be conducted in other forest types, and that additional surveys need to be conducted before any conclusions can be firmly made about habitat use. Also, the smaller disjunct areas of these forest types represented in Figure 1 should be surveyed to determine if Boreal Owl distribution is contiguous throughout these habitat types in Wyoming.

The Engelmann Spruce/Subalpine Fir forest types which are used by Boreal Owls are the largest and most valuable timber resources in Colorado and Wyoming, accounting for over 90% of the saw-timber volume in this area (Alexander et al. 1983, U.S. Department of Agriculture, Forest Service 1980 *in* Raphael 1987). There is no information on the effects of clear-cutting, habitat fragmentation, and other forest practices on Boreal Owls in the U.S. Consequently, the Boreal Owl is listed, or proposed for listing, by the U.S. Forest Service as a "Sensitive species" across its entire range of distribution in the lower 48 states. In addition, the Boreal Owl is also listed as a species of concern by state Natural Heritage or nongame programs in its entire breeding season range in the lower 48. Listing by these agencies reflects both the threat to the above mentioned habitat and a general lack of information. We hope that the information presented in this paper will be useful to resource managers and serve as an incentive for further investigations.

ACKNOWLEDGMENTS

The following individuals contributed information which made this report possible: Terry McEneaney of Yellowstone National Park; Hank Henry, Debbie Finch and Leslie Watson of the U.S. Forest Service-Rocky Mountain Forest and Range Experiment Station, and Sheri Ritter of the Wyoming Department of Game and Fish. Also, the Los Angeles County Museum and University of Wyoming Vertebrate Museums contributed specimen information. Finally, the Wyoming Nature Conservancy, Grand Teton National Park and the Grand Teton Natural History Association provided funding for preliminary field research and office support for this project. The authors would like to thank Gregory Hayward, Evelyn L. Bull, Michael Britten and two anonymous reviewers for comments on this report.

LITERATURE CITED

CLARK, T.W., A.H. HARVEY, R.D. DORN, D.L. GENTER AND C. GROVES [EDS.]. 1989. Rare, sensitive and threatened species of the greater yellowstone ecosystem. Northern Rockies Conservation Cooperative, Montana Natural Heritage Program, The Nature Conservancy and Mountain West Environmental Services, Jackson, WY.

HAYWARD, G.D. AND E.O. GARTON. 1983. First nesting record for Boreal Owl in Idaho. *Condor* 85:501.

HAYWARD, G.D. 1989. Habitat use and population biology of Boreal Owls in the Rocky Mountains, USA. Ph.D. thesis, University of Idaho, Moscow, ID.

HOLT, D.W. AND D. ERMATINGER. 1989. First confirmed nest site of Boreal Owls in Montana. *Northwestern Naturalist* 70:27–31.

LITTLE, E.L. 1971. Atlas of United States trees. Vol. 1. Conifers and important hardwoods. Misc. Publication No. 1146, U.S. Department of Agriculture, Forest Service, Washington, D.C.

PALMER, D.A. AND R.A. RYDER. 1984. The first documented breeding record of the Boreal Owl in Colorado. *Condor* 79:215–217.

RAPHAEL, M.G. 1987. The Coon Creek Wildlife Project. effects of water yield augmentation on Wildlife. Pages 173–179 *in* C.A. Troendle, M.R. Kaufman, R.H. Hamre and R.P. Winokum [EDS.], Management of subalpine forests: building on 50 years of research. General Technical Report RM-149. U.S. Department of Agriculture, Forest Service, Ft. Collins, CO.

RYDER, R.A., D.A. PALMER, AND J.J. RAWINSKI. 1987. Distribution and status of the Boreal Owl in Colorado. Pages 169–174 *in* R.W. Nero, R.J. Clark, R.J. Knapton and R.H. Hamre, [EDS.], Biology and conservation of northern forest owls. General Technical Report RM-142. U.S. Department of Agriculture, Forest Service, Fort Collins, CO.

Received 8 July 1991; accepted 14 August 1991